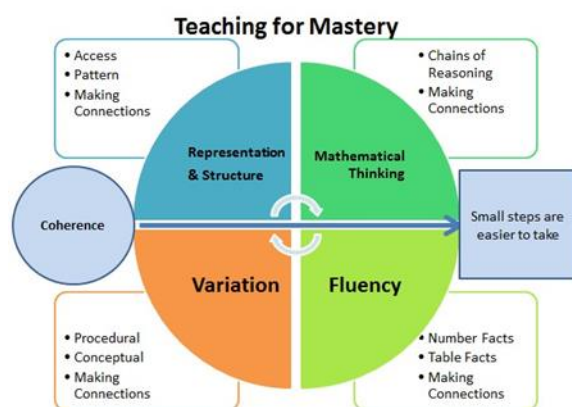


Curriculum Intent

At Churchill CE Primary School, we follow a Teaching for Mastery Approach and have chosen to use White Rose Maths to underpin our mathematics curriculum as it provides an ambitious, connected curriculum that is accessible to all pupils and has a clear progression through the primary years and beyond, enabling the children to develop deep understanding and acquire a rich knowledge base.

At the heart of our curriculum is a commitment to develop resilience, responsibility, confidence and self-belief, enabling our children to become fluent in the fundamentals of mathematics as well as develop their ability to reason and solve problems. Pupils are introduced to new mathematical concepts and develop reasoning and problem-solving skills using concrete resources; pictorial representations and finally numbers and symbols. We use the CPA approach to help pupils understand mathematics and make links in their learning, building on their existing knowledge. We place great importance on mathematical language and questioning so pupils can discuss their understanding, feel safe to make mistakes and support one another to develop their thinking.

The principles of a Teaching for Mastery Approach are:



Coherence	Representation and Structure	Mathematical Thinking	Fluency
Lessons are broken down into <u>small connected</u> steps that gradually unfold the concept, providing access for all children and leading to a generalization of the concept and the ability to apply the concept to a range of contexts.	Representations used in lessons expose the mathematical structure being taught, the aim being that students can do the maths without recourse to the representation.	If taught ideas are to be understood deeply, they must not merely be passively received but must be worked on by the <u>student</u> ; thought about, reasoned and discussed with other.	Quick and efficient recall of facts and procedures and the flexibility to move between different contexts and representations of mathematics

Variation

Variation is twofold. It is firstly about how the teacher represents the concept being taught, often in more than one way, to draw attention to critical aspects, and to develop deep and holistic understanding. It is also about the sequencing of the episodes, activities and exercises used within a lesson and follow up practice, paying attention to what is kept the same and what changes, to connect the mathematics and draw attention to mathematical relationships and structure.

Our intent focuses on equipping all pupils with the mathematics they need to master the curriculum for each year group, which requires that all pupils:

- recall key number facts with **speed and accuracy** and use them to calculate and work out unknown facts;
- develop their ability to **apply** mathematical skills with confidence and understanding when **solving problems**.
- apply their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions
- express themselves and their ideas using the **language of mathematics** with assurance.
- have sufficient depth of knowledge and understanding to **reason and explain** mathematical concepts and procedures and use them to **solve a variety of problems**.
- develop **positive attitudes** to mathematics, recognising that mathematics can be both useful and enjoyable.
- nurture a fascination and excitement of mathematics
- are able to **use and apply** the skills in other curricular areas.

Our expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of the pupil's understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those children who are not sufficiently fluent with earlier materials should consolidate their understanding, including through additional practice, before moving on.

As well as being fluent mathematicians, we aim to foster a love of learning; developing curious minds that are willing to take risks and experiment with ideas. With kind hearts, resilience, guidance and support our aim is to develop a generation of children who leave primary education believing that they can be successful mathematicians.

Implementation Organisation

- A daily mathematics lesson of 45-60 minutes is taught in Year 1 – Year 6.
- In EYFS pupils experience daily mathematics learning through whole class teacher input; teacher directed tasks and child-initiated play. Opportunities for mathematics is developed through daily routines and all areas of learning.
- Children in Key Stage 1 participate in a number facts session, at least three times a week, reviewing previously mastered number facts and practising new calculation strategies using mathematical animations. Children use exciting videos, songs and Numbots to embed their knowledge of number facts and progress is monitored with regular maths challenges.
- In KS2, teachers lead weekly counting stick sessions to encourage conceptual understanding and quick recall of multiplication and division. Children use Times Table Rock Stars outside of the maths lesson and for homework to embed their knowledge. Progress is monitored with individual maths challenges at least once a term. Success with maths challenges are celebrated once a term in whole school Celebration Services and achievements are shared with parents.
- **All children** engage in a 'Can you Still?' retrieval session once a week, engaging with low risk, high threshold multiple choice questions, fostering mathematical talk and reasoning that develops long term memory.
- Children in Key Stage 2 regularly participate in arithmetic practice, embedding their understanding and developing their confidence to use age-appropriate formal and informal written methods.

A typical 45 - 60 minute lesson is likely to include many of the following elements:

- opportunity to respond to feedback in books;
- opportunity to address any whole class misconceptions from the previous lesson;
- revisiting prior learning;
- a problem or stimulus presented to pupils to discuss and explore;
- open-ended questioning;
- children being encouraged to explain and justify their thinking using precise mathematical language, modelled by the adults;
- children making links in their learning;
- children engaged in mathematical talk;
- children 'taking risks' and recognising making mistakes as part of the learning process;
- use of confidence lines and peer-tutoring;
- new concepts introduced using a CPA approach;
- 'real' activities used (where possible) to introduce concepts and reinforce learning objectives;
- guided examples with children working on whiteboards;
- reasoning and problem-solving skills taught explicitly;
- stem sentences used to allow learners to verbalise their mathematical thinking;
- consolidation of new concepts guided by an adult;
- children assessing understanding and selecting levels of support needed;
- children engaged in varied fluency and intelligent practice (questions typified by their mathematical variation and designed to extend pupil's thinking rather than just being lots of examples presented in the same kind of way);
- children working individually on a task, in pairs or in a small group
- pupils selecting further challenges, depending on their own self-assessment and in consultation with the teachers

Learning Environment

It is important that both the whole school and classroom environment supports both the learning and teaching of mathematics.

Working walls should be used to:

- provide a reference point, supporting teaching and learning in a lesson or series of lessons;
- promote mathematical thinking and discussion;
- promote key vocabulary;
- include WAGOLLs and celebrate achievement

In every classroom, resources such as number lines, hundred squares, place value counters, double-sided counters, place value charts and multiplication squares are displayed as appropriate and used for whole class or individual work. Children are encouraged to access these independently to support their learning.

Curriculum Planning Long Term Planning

Teachers use the long-term planning based on the White Rose Maths resources. All mathematical topics are taught in blocks so that children can master each mathematical concept and apply it across a range of contexts. The White Rose Maths curriculum is a cumulative curriculum, so that once a topic is covered, it is met many times again in other contexts. Spaced repetition of key topics occurs, throughout and between years, through our Can you Still? sessions and use of resources such as 'Flashback Four'.

For the year 2020-2021, teachers and SLT will adapt the Long-term planning in light of school closures, depending on any topics which were missed or covered during home learning.

Medium Term Planning

Teachers use a medium-term planning outline based on the requirements of the National Curriculum to teach sequences that build learning over time (based on the planning produced by the White Rose Maths Hub). A strong emphasis on reinforcing number to build competency and opportunities to build reasoning and problem solving is embedded within the curriculum.

The DfE document “Teaching Mathematics in Primary Schools”

<https://www.gov.uk/government/publications/teachingmathematics-in-primary-schools>

identifies priority areas of the primary maths National Curriculum that form the essential building blocks necessary for pupils to progress smoothly from Year 1 to Year 6.

For each of these areas, the document also identifies what it calls ‘ready-to-progress criteria’ which are the concepts children need to master before they progress to the next year group. The White Rose planning resources have identified where teachers might want to spend longer on topics to secure understanding and also suggest any content that children may have missed last year due to Covid 19 school closures. Teachers have links to NCETM spine development materials to support planning of the White Rose medium term overview.

Short term planning

All teachers will produce daily or weekly planning. This will include:

- an outline for the week with learning objectives;
- a clear overview of teacher input;
- evidence of planning for reasoning: including ‘mathematical talk’ and ‘stem sentences’;
- reference to source materials;
- clear links and progress across a sequence of lessons;
- new key mathematical vocabulary
- possible misconceptions
- reference to focus children
- reference to how additional adults will support learning
- evidence of how ‘rapid graspers’ will be challenged

Teachers evaluate their plans daily, making any necessary changes and adaptations in response to assessment for learning and the needs of the class. Where appropriate, TA’s will provide feedback to inform next steps planning.

Teachers will plan for adult-led small groups and pre-teaching sessions for identified children.

White Rose, Classroom Secrets, Maths No Problem and Deepening Understanding will be used to support planning.

Impact

Assessment takes place at three connected levels: short-term, medium-term and long-term. These assessments are used to inform teaching in a continuous cycle of planning, teaching and assessment. (For further details on assessment, recording and reporting, please see Assessment policy)

Day-to-day assessments

As part of the ongoing teaching and learning process, teachers will assess children's understanding through a range of Assessment for Learning strategies. Daily annotations, which inform day to day teaching and learning, are based on observation, questioning, informal testing and the marking and evaluation of work. This will also enable appropriate written and verbal feedback to be given to children and will inform planning for the following day.

Teachers will make use of diagnostic questioning throughout all stages of pupil's learning, to identify misconceptions. Open-ended questioning is central to teacher input, enabling misconceptions to be revealed and explored. Marking and feedback will also identify misconceptions which will either be challenged or inform next steps. Learners will also be taught to assess and evaluate their own understanding by recognising successes, learning from their own mistakes and identifying areas for improvement. **(See Feedback and Marking policy for further details.)**

Summative assessments

For the academic year 2020-21, at the end of term 1, children will sit an NFER paper to assess understanding and knowledge of the previous year's maths curriculum. Gap analysis will be carried out to identify which key areas need to be focussed on. This will inform teacher planning and organisation of intervention groups so that children can 'catch up' on curriculum areas they need extra support with. Ready to progress assessments will be completed by identified children if further information is needed to inform planning for intervention groups.

At the end of the term 2, 4 and 6, children complete White Rose Assessments. This provides a summary of their understanding of the areas of the curriculum taught that term and will inform provision maps and planning. This information is used to track attainment and progress and is regularly updated on FFT Aspire where progress can be compared with FFT targets.

Pupil Progress Meetings

The amount of progress made and percentages of those children on track to reach end of year targets will be analysed and discussed at termly data meetings. Progress from Key Stage 1 will also be closely monitored in Key Stage 2 classes and compared with FFT targets.

Intervention programmes

For September 2020, before thinking about maths catch up and/or intervention, we will be considering first and foremost children's mathematical well-being for future learning, including:

- building young children's confidence,
- their willingness to have a go,
- their mathematical self-esteem and enjoyment; and
- establishing firm relationships with the adults in school and with their families

The school operates a flexible approach to intervention programmes based on weaknesses identified in termly pupil progress meetings and through ongoing data analysis by the senior leadership, class teacher and maths lead.

Teachers use guided groups led by themselves and teaching assistants to tackle children's misconceptions in maths. Pre-teaching, flexible 'catch up' sessions and adult-led small groups within subsequent lessons are used with those children who have not progressed within a lesson, with the aim of ensuring that children are making the maximum level of progress and gaps are closed.

1st Class @ Number 1 and 2, a structured early maths intervention delivered by specially trained teaching assistants to small groups of children, will be used in Years 1, 2, 3 and 4. The lessons focus on number and calculation, developing children's numeracy and communication skills whilst developing their mathematical thinking. Stimulating, enjoyable games and activities engage the children and build their confidence. A base-line diagnostic assessment allows progress to be tracked.

Number Sense - a programme used in KS1, that develops a systematic approach to teaching addition and subtraction facts within 20, will also be used as a resource for small group interventions in both KS1 and KS2.

Children working at greater depth

Pupils demonstrate high ability in mathematics in a range of ways and at varying points in their development. Pupils who are gifted in mathematics are likely to:

- learn and understand mathematical ideas quickly;
- work systematically and accurately;
- be more analytical;
- think logically and see mathematical relationships;
- make connections between the concepts they have learned;
- find rules and identity and explain patterns easily;
- be able to visualise, imagine and explain properties of shape quickly;
- be able to apply their knowledge to new or unfamiliar contexts;
- communicate their reasoning and justify their methods;
- ask questions that show clear understanding of, and curiosity about, mathematics;
- challenge or question mathematical rules;
- prove/disprove rules/generalisations based on mathematical evidence;
- Create algebraic rules based on sequences and patterns
- take a creative approach to solving mathematical problems;
- sustain their concentration throughout longer tasks and persist in seeking solutions, absorbed in their work;
- be more adept at posing their own questions and perusing lines of enquiry;
- have an ability to work calculations/problems out in their head very quickly;
- verbally articulate their strategies, findings, observations with peers/adults;
- apply mathematics to different contexts and environments;
- apply their mathematics to both routine and non-routine problems easily.

Equal Opportunities

All pupils will have equal opportunity to reach their full potential across the mathematics curriculum regardless of their race, gender, cultural background, ability or physical disability.

Inclusion

The school's equal opportunities policy applies to the teaching of mathematics as to all other subjects.

Homework

We recognise the importance of making links between home and school and encourage parental involvement with the learning of mathematics.

Homework provides opportunities for children

- to practise and consolidate their skills and knowledge of mental arithmetic methods;
- to share their mathematical work with their family;
- to prepare for their future learning.

Children in Years 1-6 receive a short piece of mathematics homework each week. This will be differentiated and is focussed on number fluency, including Times tables and/or number bonds. See **Homework** policy for further details.